Aftermath

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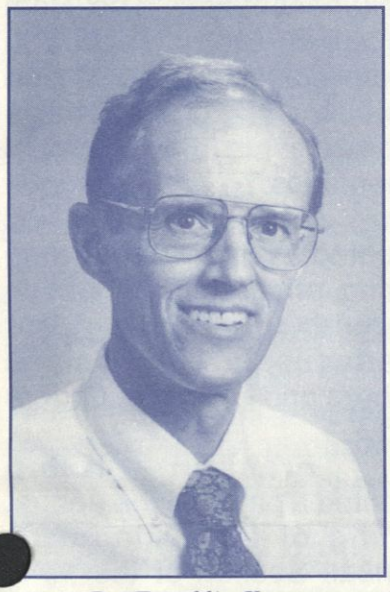
Mathematics Department Hires Two New Faculty



Dr. Franklin Kemp

Dr. Franklin Kemp comes to East Texas from just north of the Red river where he was a research mathematician at Amoco's Tulsa Research Center. He has taught at the University of Tulsa, Tulsa Junior college, and the Polytechnic University in Brooklyn, New York where he earned his doctorate. Dr. Kemp's interests and publications are in statistics and analysis. Currently he is investigating the behavior of the PRESS statistic and is excited by a nearly completely algebraic proof of the fundamental theorem of algebra.

Heidi Staebler

Hello, I am Heidi Staebler and this is the first time I have ever set foot in Texas. I grew up near Peoria, Illinois, received a B.A. in mathematics and physics from Luther College in Decorah, Iowa (look hard at the northeast corner of Iowa) and spent the last five years doing graduate work at the University of Minnesota, Minneapolis, from which I received a M.S. in mathematics.

It seems like I have always wanted to spend my life teaching mathematics so it is a thrill to be at ETSU doing just that. My primary interest is in calculus, specifically in incorporating computers/graphing calculators to give students a more visual intuition about the subject. For the past three years my teaching assistantship at Minnesota involved teaching calculus in UMTYMP (University of Minnesota Talented Youth Mathematics Program). I hope that ideas introduced to me there will be beneficial to students at ETSU.

Many people ask if I plan to complete a Ph.D. My coursework would point toward writing a dissertation in either probability or singular integral theory, both in the realm of real analysis. However, currently my heart is in teaching. Thus doing a Ph.D. in mathematics education is a strong option. The future will tell what happens.

Life is not all mathematics and teaching though. I enjoy figure skating, broomball, softball, racquetball, volleyball, cooking, sewing, camping, etc.,etc.,etc.....

Dennis Grantham Wins T.A.C.T. Award

Dennis Grantham won one of the three teaching excellence awards given by the ETSU chapter of the Texas Association of College Teachers. The award, given at the TACT annual banquet in April, consists of a plaque and $500.

Dr. Grantham has been a valuable asset to our university due to his teaching skills and his knowledge of computer science. For many years he has taught in the Department of Mathematics and in the Department of Computer Science.

Faculty Activities
Publications

Dr. Stuart Anderson published an article entitled "The Mathematical Mark Twain" in *Mathematical Connections* in October, 1993. Another article of his entitled "A Generalized Chaos Game Producing Koch Snowflakes" has been accepted for publication in *Mathematics and Computer Education*.

Dr. Franklin Kemp published an article with K. Ashenayi, G. M. Nazi and J. F. Lea entitled "Application of Artificial Neural Network to Pump Card Diagnosis" in the *Proceedings of the Society of Petroleum Engineers Production Operations Symposium* held at Oklahoma City in March, 1993.

Dr. Kemp also published an article entitled "Discussion of a Continuum-Damage-Mechanics Model of Hydraulic Fracturing" in the August, 1993 issue of the *Journal of Petroleum Technology*.

Dr. John Lamb, Jr. published an article entitled "Two Egyptian Construction Tools" in the February, 1993 issue of the *Mathematics Teacher*.

Dr. Bill Aslan, Dr. Dale Bedgood and Dr. John F. Lamb, Jr. published an article entitled "An Analysis of the Accuracy of the Rule of 72" in the May, 1993 issue of the *Texas Mathematics Teacher*.

Dr. Vance Underhill has had a paper on approximation of integrals using inequalities included in a two-volume book entitled *A century of Calculus* edited by Tom Apostol.

Ms. Sandra Johnson and **Connie Yarema** submitted an article entitled "Modification of the Key Number Method of Factoring" to the *Texas Mathematics Teacher*.

Meeting Attended

The annual joint meeting of the AMS and the MAA held in San Antonio in January was attended by **Rick Kreminski** and **John Lamb, Jr.**

The annual meeting of the Texas Section of the MAA in April, 1993 at Abilene Christian University was attended by **Stuart Anderson, Bill Aslan, Dale Bedgood, John Heath, John Lamb, Jr., Howard Lambert, Vance Underhill** and **Connie Yarema**.

Dr. Franklin Kemp attended a DERIVE Workshop at Oral Roberts University on March 26, 1993 and a Harvard Calculus Workshop at Oklahoma State University on April 23 - 24, 1993.

Dr. Rick Kreminski attended the Texas Topology and Geometry Conference on April 16-18 at Rice University in Houston, an MAA minicourse on DERIVE on April 24-25 at the University of Houston Downtown and the University of Texas Public Health Conference on Opportunities in Biostatistics and Public Health on June 6-11.

Dr. John Lamb, Jr. attended the annual meeting of the Conference For the Advancement of Mathematics Teaching in Dallas on August 11-13.

Papers Presented

Dr. Rick Kreminski presented a paper at the annual joint meeting of the MAA and AMS in San Antonio entitled "Graded Manifolds with Spin-Conformal Structure."

Dr. John Lamb, Jr. presented a paper at the same meeting entitled "A Computer Search for Hexadecimnal Narcissistic Numbers and Loops for Orders 2, 3, 4, and 5."

Dr. Bill Aslan presented two papers at the annual meeting of the Texas Section of the MAA in Abilene entitled "The Real Number System Versus a System Called 10-Adic" and "The Need to Reshape Secondary School Mathematics."

Dr. John Lamb, Jr. presented a paper at the same meeting entitled "A Selective Computer Search for Hexadecimal Narcissistic Numbers and Loops for Orders 6 and 7."

Dr. Franklin Kemp presented a paper at the annual meeting of the Oklahoma-Arkansas Section of the MAA at Oral Roberts University on March 27, 1993 entitled "How to Solve Variable Inequalities Involving Absolute Values."

Other Activities

Dr. Bill Aslan was elected president of the ETSU chapter of TACT for the 1993-94 school year.

Dr. Dennis Grantham is serving as acting head of the Department of Computer Science this fall.

Dr. Franklin Kemp has published for novice crossword puzzlers a unique paperback crossword dictionary of most common crosswords. He sells them for $1.00.

Dr. Rick Kreminski gave an invited talk at a Stephen F. Austin State University Mathematics Department Colloquium on April 22, 1993.

Dr. John Lamb, Jr. wrote some computer software that analyses and chooses random lottery numbers. A disk (3.5 or 5.25) containing them is available at the East Texas Bookstore for $4.95.

Ms. Connie Yarema was awarded a Grady Tice Excellence scholarship by the ETSU Department of Secondary and Higher Education.

Activities of Our Three Math Clubs

The Mathematics Clubs had some very good leadership and accomplished a great deal during the 1992-93 school year. The officers were Sherrie J. Cates, Pi Mu Epsilon President; Kimberly McGahee, Pi Mu Epsilon Vice-President; Ron Williamson, MAA President; Jacky P. Allen, MAA Vice-President; Kimberly Koch, Alpha Gamma Alpha President; and Connie M. Yarema, Treasurer of all three clubs.

Sherrie presented a student paper at the annual meeting of the Texas Section of the MAA in Abilene. She and Connie attended a special Saturday morning meeting of Pi Mu Epsilon and MAA student chapter officers and were able to make some important contributions during this session.!

The fall picnic, the regular monthly meetings, the Christmas Party, and the Spring Banquet all went very well under the capable leadership of the club's officers. One of the notable achievements was the organizing of a yard sale in April at the Commerce city park which enabled the clubs to donate $300 to the Bub Taylor Scholarship Fund. Ron Williamson and Kenneth Grantham worked especially hard on this project!

Three More Mathematics Faculty Members Receive Pins for Twenty-Five Years of Service.

Three members of the ETSU Mathematics Department faculty received their Twenty-Five Year Service pins on May 5, 1993. They were Drs. Archie Brock, John Lamb, Jr. and Howard Lambert. They join Drs. Dale Bedgood and Bill Aslan who received their twenty-five year pins last year.

Seventh Annual Homecoming Alumni Breakfast Scheduled

The 1993 ETSU Homecoming Mathematics Alumni Breakfast will be held at 9:00 a.m. on Saturday, October 30, 1993 in the Bluebonnet-Pecan-Friendship rooms in the Sam Rayburn Memorial Student Center. Scholarships will be awarded and alumni recognized. If possible, please attend, but in any event, take the time to fill out the form below so we can accurately update our alumni files. Reservations must be received by the ETSU Mathematics Department by October 22, 1993. We hope to see you there.

Alumni Br eakfast Reservation Form and/or Alumni News Update

Name: Position: _____

Address: _____

City, State & Zip: _____

Phone: ( ) _____

Pleae Reserve_____ places at the Homecoming Alumni

Breakfast @ $6.00 each. Total Enclosed: $_____

Send news for the Aluni News Column on the back of this form.

Fermat's Last Theorem Finally Proved True

$X^n + Y^n = Z^n$ has no positive integer solutions for $n > 2$ or $X^n + Y^n = Z^n$? Not!

One amazing consequence of recent work by Andrew Wiles of Princeton is a valid proof, finally, of Fermat's Last Theorem. Specifically, results he announced on June 21-23 in Cambridge, England in part prove that ap + bp = cp has no positive integer solutions when p is a prime greater than 3 and a,b and c are relatively prime. This means xn + yn = zn can not have any positive integer solutions for n greater than 2. (The cases n = 4 and n = 3 have to be dealt with separately, but their proofs are fairly elementary and were known over 200 years ago). Prior to June, it was known to be true for n up to 4,000,000.

The proof boiled down to the Taniyama-Weil conjecture, which states that all "elliptic curves" defined over the rational numbers, Q, are "modular". Wiles wasn't able to prove this, but he did show all "semistable" elliptic curves over Q are modular. The connection between this and Fermat's Last Theorem is as follows: say there were positive relatively prime integers satisfying ap + bp = cp when p is a prime greater than 3. Consider the function

$$y^2 = x(x - ap)(x + bp).$$

The graph of such a curve, called the "Fermat Curve," would be symmetric with respect to the x-axis, and would have two components, a circle in quadrants II and III, and a "curvy" part extending out to + and - infinity in quadrants I and IV. In general, when y2 = a cubic function of x, such a curve is called an "elliptic curve." The "semistable" property roughly refers to the fact that there are 3 distinct zeroes for it when y = 0 and those zeroes don't have too many common factors when taken modulo any prime. The "Fermat curve" would have to be a semistable elliptic curve. Serre noted that one of his many conjectures implies that this curve could not be "modular" for p > 3 which roughly means it can not be expressed in a certain parametric form. Ken Ribet was able to prove the relevant conjecture of Serre in 1986. So the "Fermat Curve", if it existed, could not be modular, but it would be semistable. These two properties together contradict what Wiles proved. So the "Fermat curve" can not exist so there are no positive integer solutions for xn + yn = zn when n is greater than 2.

Andrew Wiles turned 40 in April, and there is some discussion as to whether he will receive the celebrated Fields Medal for his proof because it is reserved for mathematicians under 40.

Seminars Presented During the 1992-93 Academic Year

The ETSU Mathematics Department ran several seminars during the past academic year. Three ran (almost) weekly during the spring semester and were somewhat technical introductions to Wavelets, Catastrophe Theory, and Quantum Groups.

The department also held numerous one-time seminars including abbreviated versions of talks given at the joint national meeting of the MAA and AMS in San Antonio and at the annual meeting of the Texas Section of the MAA.

A two-day seminar held during the summer discussed the recent proof by Andrew Wiles of Fermat's Last Theorem.

Three East Texas Students Participate in the Putnam Exam

On December 5, 1992 the 53rd annual Putnam Exam was held nationally. The exam is 6 hours long, and consists of 12 problems (examples below). Out of a possible score of 120, the most common score received is 0. For the last exam, 609 out of 2421 entrants received that score. One of the top five finishers is awarded a stipend as well as a full tuition scholarship to Harvard.

ETSU fielded a team consisting of Sherrie Cates, George Ferguson, and Greg Vestal. Our top finisher from last year, who was in the upper half of the country, will probably be on the team again this year.

Math Department Sports Activities

Our intramural basketball team during the Spring of 1993 consisted of many seasoned veterans, a couple of youngsters left over from last year, and Mike Hooper, a new recruit from our Math 372 class. We started slowly, but came on strong at playoff time, getting barely defeated by a bunch of nineteen-year-old former Commerce High School players.

Mathematics personnel also formed the nucleus of a second basketball team which included Ron Williamson, Ken Grantham. Eric Aurand, Perry Montgomery, and Rick Kreminski.

Kim McGahee, Jennifer Carroll Reamy, and Tina Grantham participated in a coed basketball league.

The Irrational softball team also had a so-so season but did win our first game of the playoffs. The members were the old mainstays plus Mike Hooper, who played a pretty mean third base!

Faculty Health Report

From the last issue of Aftermath to the present, the health of most mathematics faculty members has been quite good.

Dale Bedgood continues to receive positive reports from the semi annual examinations following his radiation treatments for cancer in the fall of 1991. He is also doing well after his surgery for sinusitis in November, 1992.

Howard Lambert is still enjoying good health since his heart attack in 1987 and is able to do his usual activities within reason. However, his periodic examination this summer did reveal a concern, so his doctor at Baylor Hospital did a corrective procedure to eliminate the development of a possible problem in the future.

Dennis Grantham, who had surgery for cancer in May, 1992, has learned that it has recurred. Tests indicate there is no other cancer in his body, but surgery is necessary to remove the cancer he has.

Stuart Anderson became ill about the middle of August and was confined to a hospital for treatment of what has been described to us as a chemical-imbalance. At this time, he is taking it easy, coming to the office for brief periods, and is not teaching any classes this semester.

New ExCET Test Preparation Course

During the spring semester of 1993, a new one semester hour course was offered to help students prepare for the ExCET test they must pass in order to be certified to teach mathematics in the secondary schools of Texas. A brief period of time was spent becoming familiar with the TI 81 a graphing calculator that students use on the test. The remainder of the time was spent going through the ExCET preparation manual published by the Texas Education Agency. Though the first group from the class taking the test was small (5), we had 80% passing the test. Hopefully, we will be even more successful as we learn more about how to teach this class.

Scholarship News

The department awarded scholarships to the following students during the 1992-1993 academic year. The name of the scholarship is in parentheses:

Sherrie Cates
(Rachel Lafferty)

George Ferguson
(Cecil B. Wright)

William Taylor and
Dale Henderson
(W.W.(Bub) Taylor)

Stephens Johnson
(John and Elaine Yznaga).

At press time, for 1993-1994 a scholarship has been awarded to Toni Humphries (John and Elaine Yznaga). More will be presented at the annual alumni breakfast on October 30, 1993.

The generosity of alumni, former colleagues, and other friends in endowing these scholarships is very much appreciated by the department and students alike, especially in economic times like these.

Math Skill Center

The Math Skills Center (MSC) is preparing for another busy year. The number of students who take advantage of the services provided by our staff continues to grow each semester. Last year's move to rooms 327 & 328 in Binnion Hall allowed more space, but we still have days when there are more students than chairs.

We expect to upgrade the computers in the MSC this year, and add a statistical software package for student access. We expect the number of students who use the machines to increase as students become more comfortable with technology. There are many courses in our curriculum which will benefit from the use of current software packages, and we want to be prepared to provide students with the opportunity to practice on the machines. Stop in to see us when you are on campus.

Mathematics Workshops for Teachers in Nevada

In the field of Mathematics Education, the U.N.L.V Mathematics Department is among the few universities in the nation which offered two summer workshops (Pre-Calculus, Calculus) for certified teachers to sharpen their skills and improve their effectiveness in the class room. Dr. Bill Aslan during the second summer session of 1993 had the honor of being selected to teach these workshops. Teachers in the Clark County School District who participated in the workshops experienced success in answering President Bush's call for team work to meet the challenge of America 2000. These workshops demonstrate the discovery approach which is an appropriate mathematics instruction method for public school teachers. In addition, these workshops present content with instructional strategies that help teachers develop their mathematical talents and build the confidence necessary to become a master teacher. These workshops focus on problem solving, implementing the new technology and teaching for understanding.

Alumni News

John Carlisle (BS 86, MS 88) received his Ph. D. in physics from the University of Illinois in September, 1993. He currently holds a Post Doctoral Research position in the Chemistry and Materials Science Department at Lawrence Livermore National Lab, Ca. His new address is P. O. Box 3107; Livermore, CA 94551.

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